

WNRI Research Note 16/2008

# Report from the CIVILCLIM study tour to Sweden and the Netherlands, October 2008

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# WNRI Research Note

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## Summary

## Other publications from the project

Husabø, I. A. (2008). Exit War, Enter Climate? Institutional change and the introduction of climate adaptation in Norway's public system of civil protection. <u>WNRI Report 9/08</u>. Sogndal, Western Norway Research Institute / Vestlandsforsking.

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# Preface

From Monday 13 to Thursday 16 October a study tour to Sweden and the Netherlands took place as part of the Norwegian Research Council project *Civil protection and climate vulnerability* (CIVILCLIM). The main purpose of the tour was to achieve insight into how disaster management and the work with climate change adaptation is organised and how the work contributes to the development and implementation of adaptive measures.

The CIVILCLIM research group includes staff members from three partner institutions: Western Norway Research Institute (WNRI), the Swedish Defence Research Agency (FOI) and the Center for Clean Technology and Environmental Policy (CSTM), the latter located in the Netherlands. Due to illness, the Swedish partner was only able to attend the first day of the study tour, whereas the project staff counting five researchers from WNRI and CSTM took part in the entire study tour.

I wish to thank Annika Carlsson-Kanyama at FOI and Frans H. J. M. Coenen at CSTM for putting together a most interesting programme in Sweden and the Netherlands, respectively.

Carlo Aall Project manager

# Sweden

In Stockholm, representatives of two out of three bodies which are due to merge in 2009 gave an introduction to their work, as well as presenting the nascent Swedish Civil Contingencies Agency (MSB)<sup>1</sup>. The new agency will encompass the Swedish Rescue Services Agency (SRSA)<sup>2</sup>, the Swedish Emergency Management Agency (SEMA)<sup>3</sup>, and the National Board of Psychological Defence (SPF)<sup>4</sup>. The new authority will be responsible for unifying, coordinating, and supporting tasks prior to, during and after emergencies. It is expected that the MSB will have "more muscles" vis-à-vis local authorities, for example in the sense that the new agency will have the mandate to tell municipalities how to conduct risk and vulnerability analyses, rather than just requiring such analyses.

Overlaps between the agencies, in addition to a government policy of reducing the number of agencies, was identified as the main reasons for the merger. Some concern was voiced with regard to a clearly discernible professional and educational 'profile gap' between the two merging government agencies. Whereas SEMA's staff is characterised by a high number of young academics with relatively little working experience, the staff of SRSA is generally older, and dominated by civil servants with predominantly practical experience.



Locations visited in Sweden

#### The Swedish Emergency Management Agency (SEMA)

focuses on safeguarding the life and health of citizens, as well as the overall functionality of society. To maintain an overview of risks, the agency presents annual threat and risks reports, where natural disasters are granted a considerable amount of attention. So is terrorism, "but natural disasters are sure to happen at regular intervals". Moreover, the staff expressed an assumption that climate-related natural disasters will gain importance after the merger.

As is the case in Norway, a preference for a bottom-up perspective of emergency management was communicated, the notion being that crises always occur in municipalities and consequently, the regional and central levels should primarily be supportive to the local level (290 municipalities). Another similarity with Norway's system of civil protection is the basic principle of responsibility underpinning emergency work; in short, this entails that each body undertakes the same tasks during a crisis as under normal circumstances.

As for the overall approach to crises, a paradigm change has occurred in Sweden over the last decade. Having abandoned the notion of making society sufficiently robust to handle any possible crisis, Swedish authorities have embraced a less ambitious and

less costly approach, which simply entails an effort to handle crises better.

From the perspective of CIVILCLIM, the most relevant of the current bodies is the **Swedish Rescue Services Agency (SRSA)**. The SRSA has already embarked on a process of assessing the future impact of climate change, as well as describing adaptive measures. As a contrast, the Swedish Emergency Management Agency in Stockholm seemed more occupied with traditional (predominantly military-related and security-related) aspects of civil protection work.

Reports by a Government Committee (October 2007) establish climate change as a fact that must be dealt with by Swedish authorities. The main problems mentioned were: increased runoff causing river floods in the western, southern and mountainous parts of Sweden, an increased risk of forest fires, sea level rise and coastal erosion, landslides. One worst case scenario touched on is the City of Karlstad, which could be entirely flooded. The area

<sup>&</sup>lt;sup>1</sup> Myndigheten för samhällsskydd och beredskap (MSB)

<sup>&</sup>lt;sup>2</sup> Räddningsverket (SRV)

<sup>&</sup>lt;sup>3</sup> Krisberedskapsmyndigheten (KBM)

<sup>&</sup>lt;sup>4</sup> <u>Styrelsen för psykologiskt försvar (SPF)</u>

## VESTLANDSFORSKING

around Lake Vänern was subject to serious flooding in 2000-01. A tunnel to the sea has been discussed. The SRSA produces general soil stability maps (since 1987), and flood inundation maps (since 1988). Swedish municipalities are eligible for partial subsidies for risk mitigation measures (floods and landslides). One obstacle to developing an effective climate adaptation policy in Sweden is getting politicians to accept or vote for costly long-term investments, and getting them to work in a longer perspective than today.

The climate adaptation effort in **Stockholm Municipality**<sup>5</sup> will be carried out by a working group established through the Steering Committee (which is in turn formed by the Executive Committee). A Risk and Vulnerability Analysis for Stockholm will be developed, and the issue of climate change is likely to be included. The County Administration has issued guidelines for city planning in floodprone areas. Depending on the purpose of the building being constructed, either a 100-year flood level or a 10 000-year level should be applied.

A source of particular concern, the lock



Overview of Nya Slussen

Slussen in central Stockholm lets the fresh water from Lake Mälaren out into the Baltic Sea. The Slussen area is also a tremendously busy traffic juncture for trains, buses, pedestrians, and cyclists alike. For years, Slussen was held up as an example of ingenious traffic and urban planning. In recent years, it has attracted mounting criticism due to the extensive use of concrete in its construction, and the increasingly dilapidated state. In 2005, major parts of Slussen had to be closed to traffic as it was considered to be too dangerous for heavy vehicles. Currently, complete reconstruction is underway, partly also because of the area's climate adaptation needs; sea-level rise could pose a serious threat in the form of an influx of salt water into Lake Mälaren, polluting Stockholm's main fresh water supply. The main goals of reconstructing Slussen include reducing the risk for flooding as well as low water levels, preventing salt water intrusion, and maintaining the variation in the water level of the lake. 'Nya Slussen' (the new Slussen) will in part be developed by the consultancy Tyréns<sup>6</sup>, which provided a guided tour of the area.

<sup>5</sup> Stockholms kommun

<sup>&</sup>lt;sup>6</sup> <u>http://www.tyrens.se/sv/Referenser/Nya-Slussen/</u>



Aerial photo of Falterbrohalvön (Skandör) (Photo: Vellinge Municipality)

Vellinge Municipality<sup>7</sup> on the southwest coast of Skåne is characterised by nearness to Malmö, good communications, an abundance of cultural and historical monuments, a lively summer season with summer houses and outdoor sports. The number of inhabitants is rising, though about 40 per cent of the dwelling houses in the seaside village are summer houses. Large parts of Vellinge, including areas rich in historical monuments, are periodically threatened by high sea levels, which occur in connection with storms in the Baltic Sea. The municipality has focused on risks related to sea-level rise for a decade, in collaboration with the University of Lund. Inhabitants are anxious about the consequences of climate change. Conclusions: Sea

levels could rise by 190-230 cm in the next 100 years. Extreme waves and high water will not occur at the same time. Rising sea levels will lead to beach erosion 30-70 m. A pilot study presented by the County Administrative Board shows that with 1 m sea-level rise, 18 per cent of Vellinge will be flooded. With 2 m, 42 per cent is under water. As for preventive measures, there are unresolved issues which partly involve the County Governor (Länsstyrelsen) in Skåne, the latter being unwilling to let the municipality reinforce old protective banks made of seaweed. Alternative measures have also been discussed. Possible input from Dutch experiences with erosion control was discussed during the meeting (i.e. using the "sand motor" to bring more sand to the exposed area by pouring sand into the sea at the point where the sand transport starts). Another problem is the 'drive towards the sea' experienced among current and future inhabitants. There is a pressure to build closer to the sea, but this is also the most vulnerable area. A dilemma has occurred between the need to keep the area populated for the sake of local schools etc., and keeping the area safe from the sea.

**The County Administrative Board of Skåne**<sup>8</sup> is one of Sweden's 21 regional governmental bodies, led by a County Governor (Länshövdingen). All of the Board's tasks are defined by the Swedish Government, and has 450 employees. There is no political component. The County Administrative Board of Skåne covers 33 municipalities (1.2 million inhabitants). With regard to climate adaptation, the previous County Governor of Skåne led the work with a national climate vulnerability study, and he has been travelling around Sweden since in order to raise awareness of climate vulnerability and adaptation issues. As for civil protection tasks, the Board undertakes preventive measures and provides coordination and information during crises, but has 'small muscles', i.e. is not authorised to give orders to the local level. In recent years, the area has experienced three major extreme weather events with wide-ranging consequences (esp. long-lasting power cuts), including the storm 'Gudrun' (January 2005), the storm 'Per' (January 2007), and serious flooding (July 2007). Points of special vulnerability are electricity, telecommunications, railways, roads, and local social welfare service. Importantly, the concept of liability is being introduced in Sweden; from 2011 on, compensation can be claimed from power supply companies after 24 hours. In December 2008, the Board will meet with the electrical companies to discuss scenarios and weaknesses. In the telecommunications sector, privatisation has proved a serious problem for the Board, as it is almost impossible to achieve contact with the companies.

<sup>&</sup>lt;sup>7</sup> Vellinge kommun

<sup>&</sup>lt;sup>8</sup> Länsstyrelsen i Skånes län

Sea-level rise is identified as the greatest climate threat, as the entire coast of Skåne is affected (11 of the big cities and 16 municipalities), including popular and densely populated areas, vital infrastructure (E6 and one of the main railways run up the west coast). Salt water intrusion and sewage, flooding, coastal erosion, rising ground water levels, and landslides are among the main problems associated with sealevel rise in Skåne. A report from the Swedish Meteorological and Hydrological Institute, 'Stigande havsnivå – konsekvenser för fysisk planering' (2007) identifies threats and summarizes available information for the municipalities. A follow-up report (2008) will suggest how the municipalities should proceed. Most municipal authorities are very grateful for



Presentation of the effort to prevent coastal erosion (Magdalena Lindberg, County Administrative Board of Skåne)

this material. From 2009 on, the Board will be entitled to raising formal objections if municipal plans do not pay attention to climate change. As for liability, municipalities in risk areas are responsible for damages ten years ahead, but an expansion to 20 years has been suggested.



The two-day simulation exercise "Sydvind", focussing on handling nuclear accidents, involved a large part of the system of civil protection in Southern Sweden.

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# The Netherlands

In the Netherlands, two bodies responsible for crisis management gave a presentation of their work: The crisis management of Overijssel, and the Water Board of Regge and Dinkel. Both are located in the province of Overrijssel in the central eastern part of the Netherlands.

**The crisis management of Overijssel** lies under the jurisdiction of the Queen's Commissioner of Overijssel. The Commissioner is appointed by the Crown, the head of the province and the chairman of both the elected provincial parliament and the executive branch. The provincial parliament is elected every four years. The executive branch oversees day-to-day affairs, and is elected by the provincial parliament among their members. While in office, the Commissioner is expected to be politically neutral. The province of Overijssel consists of three regions: De Kop van Overijssel in the north, Salland in the centre, and Twente in the south-east.

The crisis management team is responsible for one of the Commissioner's main tasks: To prevent disasters and to coordinate disaster management according to the Law of disaster and serious accidents (Wrzo). The team functions as an advisory unit for the Queen's Commissioner in order to secure the cooperation between national authorities, provinces, the army, and local governmental bodies such as municipalities, water boards and the police. Their responsibility is to prevent and handle serious disturbances of general safety and situations where the life and health of a large number of the population or large material interests are threatened. When a crisis situation is expected to occur, the regional crisis management team cooperates with a preparation team of policymakers, a cooperation that continues during the state of crises.



The provincial level of the crisis management starts to operate when a crisis is too extensive for a municipality to handle it or when the crisis affects several municipalities. Thus, the Dutch crisis management has a bottom-up perspective similar to that of Norway and Sweden, considering that the role of the national and regional level is to support the local level. A new law on safety and crisis management is expected to be passed soon, in which the role of the Queen's Commissioner and the crisis management team will be changed. The law will focus on the cooperation between the fire department, the police, medical assistance, and the municipalities.

Several incidents have led to an increased focus on the need for risk monitoring and risk communication, including the explosion of a fireworks factory in Enschede in 2000. The Law of disaster and serious accidents (Wrzo) requires provinces to create instruments for risk communication in order to inform the citizens about risks, where the risks are located, and how risks and disasters are to be handled. Consequently, the province of

Overijssel has developed a risk map covering their area. The primary aim of the risk map is to inform the public about risks in their neighbourhood. The main target group for the risk map, therefore, is the general public and businesses. Second, the map is used as a policy instrument which gives an up-to-date and comprehensive database of risks. The map may be useful for professionals of disaster control, risk management, spatial planning, and environmental policies. Therefore, the target groups for the risk maps are not only the public, but also municipalities and provinces, fire departments and the police, water boards, and the national government.

The risk map of Overijssel gives information on risk sources (risk objects) and risk receivers (vulnerable objects) alike. It covers a wide range of risks, including hazardous substances; airplane accidents; accidents on water, on land, and in tunnels; fires in large buildings; public order disturbances; and natural hazards such as flooding and forest fires. The information is provided by the municipalities under the Law of Disaster and Serious Accidents (Wrzo) and the municipalities, provinces, and national government under the Environmental Management Act and the RRGS decree. The general public is given access to the risk map through websites. Currently, there are plans to extend the risk map to cover aerial pictures, more in-depth risk mapping, and data on spatial planning, permits and environmental data. The map may also be extended to cover a larger area included regions at the German and Belgian side of the border.

Flood defence is a special area of concern in Overijssel, as it is in most of the Netherlands. In the Overijssel province, the waterways of Ijssel, Vecht, Zwarte Water and Ijsselmeer are the most important risk sources when it comes to flooding. In order to prevent and handle flooding, the water levels are being monitored and the crisis team has developed regional emergency plans. Furthermore, the crisis team models scenarios of flooding and presents them as maps, graphs, and films at the risk map website.

**The Regge and Dinkel Water Board** is one out of 25 water boards in the Netherlands, covering the Twente region in Overijssel with the Regge and Dinkel rivers. The water boards are actually the oldest democratic structures in the Netherlands, as they were set up in the 13<sup>th</sup> century. For the most part, they function as they did in the beginning, having the responsibility of securing water quality and of maintaining water systems, including canals, rivers, and dikes. The Regge and Dinkel water board consists of 30 members who are directly elected, and includes both a daily board of 4 aldermen and a general board. It has 340 employees and an annual turnover of 100 million euros, and is funded through various taxes which each water board has the authority to impose.

The water board is in charge of the management of water-related calamities such as flooding, drought, pollution of surface water, and summer stress. When a crisis occurs in the region, the authorities shift to crisis organisation. This situation involves the water board as well local politicians. Important decisions must be made by the politicians, for instance decisions on evacuation. In the water board, this is often regarded as a challenge to the efficiency of the crisis management. As regulated by law, the water board is in charge of yearly training sessions, of making calamity plans, and of synchronizing their plans with other relevant bodies and structures.



Henk Top at the Regge and Dinkel Water Board

As a result of climate change, the water board is expecting an increase in the frequency of river flooding. Like the crisis management of the Overijssel region, the water board uses the WB21 strategy (Water Management 21<sup>st</sup> Century) in order to meet the challenge. In this strategy, each area deals with its own problems in order to avoid negative effects in other areas downstreams. The strategy is to store the

water when the water levels are high, and then discharge the water back into the river when the water level has decreased. As a consequence, detention areas have been made in order to store water. Land owners and farmers who accept the inconvenience of getting their fields flooded receive economic compensation. Today a

The water board of Regge and Dinkel is coordinating the WAVE project (Water Adaptation is Valuable for Everybody), a European project on water management in a climate change perspective. The aim is to prepare European regions for changes in their water systems as a result of climate change, through planning and communication to the public. The partners are situated in six regions in five European countries, including the Netherlands, Great Britain, Germany, Belgium and France.

# Appendix: Participants and study tour programme

## **Participants**

From Western Norway Research Institute: Kyrre Groven, Idun A. Husabø and Ingrid Sælensminde From CSTM, University of Twente: Frans H. J. M. Coenen and Cheryl de Boer

#### Mon 13 Oct

#### The Swedish Emergency Management Agency (Krisberedskapsmyndigheten)

Malin Fylkner (SEMA): *The Dependency Project* <u>Anna Nyman (SEMA)</u>: *The Swedish Civil Contingencies Agency (SCCA)* <u>Svante Ôdman (SEMA)</u>: *Security Research in the Public Sector* Gunnar Häggmark (SEMA) Tor-Björn Åstrand Karlsson (SEMA) <u>Anna Nordlander, Swedish Rescue Services Agency</u> (SRSA): *Sweden facing climate change – threats and opportunities* 

#### The municipality of Stockholm

Lisa Enarsson, Stockholm municipality, Environment and health administration: What are the probable effects of the future climate in Stockholm and how is the work on climate change adaptation organised? Elisabeth Söderström, City Planning administration of Stockholm: Areas in Stockholm with risk for local flooding and the need of adaptation in the physical development process Ingmarie Ahlberg: Adaptation of Slussen Slussen – walking tour Idun A. Husabø, WNRI: Presentation of the CIVILCLIM report Exit War, Enter Climate

## Tue 14 Oct

#### The municipality of Vellinge

Meeting with <u>Hans Folkeson</u>, <u>Lars Robert Göranson</u> and <u>Karin Gullberg</u>. Excursion to the Falsterbro Peninsula

### The County Administrative Board of Skåne (Länsstyrelsen), Malmö

<u>Ola Fischer</u>: Experiences from extreme climate events; crisis management – the role of County administration <u>Stina Westlin</u>: The project "Rising Sea Levels" Visit at the headquarter under the nuclear emergency exercise SYDVIND Lessons learnt from floodings in Skåne by <u>Lennart Höglund</u> and <u>Susanne Eriksson</u> Probable role of the County administration in future climate adaptation Experiences from the Netherlands and Norway. Discussion

### Wed 15 Oct

#### The Province of Overijssel, Zwolle

<u>Trijntje Halfmouw</u>: Disasters in the Netherlands <u>Alexander Bouwman</u>: The risk map in Overijssel <u>Dianne Laarman-Hoogendoorn</u>: Flood defence

## Thu 16 Oct

#### Regge and Dinkel Water Board, Almelo

All presentations by Waterschap Regge en Dinkel <u>Piet van Erp</u>: Climate Change and the role of the Water Boards <u>Jeroen van der Scheer</u>: Measures which are taken with respect to climate change <u>Matthijs Overbeek</u>: Emergency Planning at the Regge and Dinkel Water Board <u>Henk Top</u>: Technical Information Systems for Directing Water

Project group meeting at building de Spiegel, Enschede (project manager Carlo Aall via videoconference)